

Purpose: The traditional prone patient position for craniospinal irradiation [CSI] is not suitable for paediatric patients requiring anaesthetics. A new supine CSI technique was developed to implement crucial features of the prone technique—the ability to palpate the spine and pre-treatment verification of junctions.

Methods and Material: Fourteen patients have been treated using a custom treatment board, which indexes to the CT and Varian Exact™ couch. Patient were immobilized with a thermoplastic head-and-shoulder mask secured to the board. Three-dimensional CT based plans were developed with the collimator of lateral opposed cranial fields rotated to match the beam divergence of the posterior spine field. The fields junction along a common line running through the mid-sagittal plane.

The junction was confirmed using a 2 mm radio-opaque marker placed daily on the anterior surface of patient's mask at the intersection of inferior border of cranial fields. Pre-treatment electronic portal images of the lateral cranial and posterior spinal field borders were captured and assessed to confirm the position of the field junction, with discrepancies greater than 2.0mm corrected prior to treatment delivery.

Results: This new supine CSI technique has improved patient comfort, treatment set-up reproducibility and stability. It mirrors the prone technique in matching field junctions and maintaining the ability to palpate the spine. Standard EPI measuring tools facilitate the assessment of marker position relative to the field edge and patient anatomy.

Conclusion: Supine CSI has increased patient safety through improved airway access in the event of respiratory distress. Supine positioning facilitates alternative distraction devices, such as video entertainment, reducing the need for anaesthetics in the paediatric population. The couch indexing system has allowed a more accurate monitoring of treatment set-up, as demonstrated by a decrease in post-planning shielding modifications. The supine technique is preferred for patient comfort, precise junction match, and demonstrated reproducibility.